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THE WARFARE AGAINST INFANT MORTALITY

BY S. W. NEWMAYER, M.D.,

In charge of Child Hygiene, Department of Public Health and Charities,
Philadelphia.

Health is fostered by legislation and education, the one compelling and the other prompting us to seek it. The citizens of a country need laws, rules and regulations to assure to them protection, comfort, happiness and health, but the needs of the child are vastly different from those of the adult. The country which first recognizes its responsibilities to the child, and tries to fulfil those obligations will receive the recognition of the world as being the foremost civilized nation. The United States is awakening to such realizations when it contemplates a National Child Welfare Bureau. Such a department would not make laws to correct existing evils and defects, but it could collect existing data on the care of the child, study the most practical and efficient methods for its welfare; codify, simplify and place to their full and proper use existing laws. It would encourage individual investigations, and could teach state and municipal health departments and children organizations how they can best use their resources.

There is little sense in urging an increased birth rate when we do not know how to keep alive and healthy those children born. Our knowledge of food values and rational practical infant feeding is vague. Food and feeding seem too commonplace for most of our scientists to devote time to. Millions of dollars are given for research work on tuberculosis, pellagra, and other diseases that have been much advertised but are far less destructive to our population than the preventable diseases of infancy. While the important causative factors of many of these deaths are ignorance and superstition, improper feeding is the chief one.

The least read volumes published are health reports. This is true even among those whose duty it is to read them. Figures make uninteresting reading, and the more so when you must dig out that which is of value. A study of the Mortality Statistics, Bureau of the Census, United States, 1909, answers the question,

why we should be aroused to activity. A total of 140,057 babies under the age of one year, died in 1909, in the registration area reported upon by the United States Census Bureau. This area is approximately about fifty-five per cent of the population. Of this number of deaths, the diseases of early infancy claimed 33,274, including premature births and congenital debility, malformations 7,286, and respiratory diseases 22,990, of which pneumonia has 17,549. Tuberculosis of all forms claimed 2,406, and epidemic diseases 7,132. Convulsions, which means no correct diagnosis made, is charged with 4,613, and other ill-defined diseases 6,615. Diarrhea and enteritis tops the list with a score of 36,516, while other diseases of the digestive tract adds 4,645.

An intelligent comprehensive study of these statistics is necessary to plan our lines of defense. We must separate those diseases which are preventable from the wholly inevitable ones. Better and more accurate statistics are needed, especially on births. Infant mortality should be compared to infant population or the number of births. Full accurate statistics are at present not available. Accurate death certificates, recording the correct cause of death would lead our activities in the right direction. While some of the diseases causing infant deaths are classified as non-preventable or inevitable, they are, to a varying degree, preventable. The deaths from premature births and congenital debility may in coming years be greatly lessened by the education of the public on such questions as the social evil, also by the teaching of the expectant mother and placing her in better physical and hygienic conditions to meet the requirements of her approaching motherhood. The same problems that are to be considered in the premature births and the deaths of earliest infancy are important for that vast unrecorded number of infants not born. The fetus which is destroyed after the time of viability, the loss of "the possible infant" is not only adding to an unregistered infant death rate, but also making the mother less able to meet the needs of future child bearing. The plea that these earliest deaths are fortunate in that they give us the "survival of the fittest," is erroneous. That we are saving and prolonging the lives of a lot of weaklings is true only in a very narrow sense. The gardener destroys the undesirable blooms to give a hardier plant, but he studies how to obtain from the seed only the best and strongest plants.

Respiratory diseases, among which pneumonia is the arch enemy, are greatly preventable by the education of the people in the value of fresh air, the need of dressing the child according to the variations of temperature and humidity, and the improving of the housing, sanitary and living conditions. Tuberculosis and epidemic diseases are to a great extent preventable, while diarrhea and enteritis, with 36,516 deaths in the first year of life, is almost wholly preventable. This is the disease against which most cities have directed their energies. Summing up the deaths at all ages from all causes, we find that one-fifth of these deaths are among infants under one year of age, and one-fourth under five years. Of this death rate, one-half die in the first six months of life. The sad feature of this record is one-half of these deaths among infants are unnecessary and preventable. The inhabitants of the United States are not the only ones who have this perplexing problem to solve, for while some other countries are more fortunate, others are less so. Study the accompanying statistics from the various countries of a civilized world, and then ask if some urgent action is not necessary. In one year a grand total of 3,243,958 deaths in the first year of life. This means a baby dies somewhere every ten seconds, 360 every hour, and 8,640 every day; *and one-half of these deaths are preventable.*

Out of every 1,000 births, the following number of children will die in their first year of life in various countries forming the civilized world. (Compiled from the averages of ten years.)

Country.	Deaths under one year to 1,000 births.	Deaths under one year actual numbers.
Chili	326	30,303
Russia (European)	263	1,298,245
Austria	222	200,553
Roumania	218	49,589.
Hungary	212	154,100
German Empire	197	374,153
Jamaica	181	6,414
Ceylon	179	23,255
Spain	170	106,649
United States (1900 approximated) ..	165	280,000
Italy	161	83,970
Belgium	154	28,499
Japan	153	220,013

Country.	Deaths under one year to 1,000 births.	Deaths under one year actual numbers.
Servia	153	16,268
France	148	115,378
Bulgaria	144	23,577
Canada	140	8,200
Great Britain and Ireland	139	147,660
Switzerland	138	11,441
Holland	138	19,209
Finland	133	10,877
Western Australia	127	756
Denmark	124	8,089
New South Wales	99	3,745
Victoria	98	2,299
Sweden	96	1,197
Queensland	94	1,120
Tasmania	93	433
South Australia	93	608
Norway	86	4,231
New Zealand	76	2,233
Grand total		3,243,958

The following statistics tell most graphically what the chances are for any one at a certain age, to live. Note that the infant under one year has the same chances as one who has passed the biblical allotment of three score and ten, as the death rate at these periods are about the same.

DEATH RATE AT EACH AGE PERIOD

(U. S. Census, 1890-1900.)

	Death Rate.	
	1900.	1890.
Under one year	165.4	205.8
1 to 2 years	46.6	84.9
5 to 9 years	5.2	7.3
10 to 15 years	3.3	3.8
25 to 30 years	8.6	9.9
45 to 50 years	15.2	16.5
60 to 65 years	35.1	32.8
70 to 75 years	75.2	64.5
80 to 85 years	165.8	144.6
90 to 95 years	339.2	260.0
95 and over	418.0	347.1

We can truly believe "the business of being a baby must be classified as an extra hazardous occupation." We have so far focused our attentions and sympathies upon the great number of deaths among infants, but how about the living, those who through ignorance or neglect in the early years of life, in that great important formative period, the time of building the foundation, are made to swell our lists of weaklings and invalids, to fill our institutions and hospitals. "The magnitude of the loss by death is also an index to the amount of harm inflicted on the living." Our national forests and waterways are of importance and claim the attention of our government, but we must not forget the value of our resources is dependent on the citizens that foster them. "The child is our greatest national asset. Let conservation begin at home."

Several countries, for years, have deplored their decreasing birth rate. Startling statements have been made as to the possible passing of certain races. They watched closely the coming of the race, but overlooked the going. "It is not the babies born, but those saved that count." Governments are beginning to learn from those who are responsible for the health of the population that "every child born healthy is entitled to become a normal, healthy and useful citizen."

What is being done to battle with the mortality among infants? Ignorance, neglect, superstition and poverty are known factors of causation. Pure, clean food and proper feeding are necessary for the infant. Statistics prove that one breast-fed infant dies to every ten artificially fed. The physician, the midwife and the mother must be taught the necessity of breast feeding. The child must not be deprived of this hereditary right on the least pretext. This need was forcibly impressed on all who visited the exhibit at Baltimore. Here was displayed a large photograph of a mother with her infant at the breast and bore the inscription "This Baby is getting a Square Deal." Is yours? Of course there are some cases in which the mother is unable to nurse her child. Many of these would have had the necessary nourishment if in the last stages of pregnancy the mother had been taught the proper hygiene of this period and if she had the proper nourishment for herself. Philadelphia has succeeded along these lines through the visiting nurses caring for expectant women. Where poverty existed the mother was given milk free, and placed in the best hygienic con-

dition. If she was compelled to work in a factory at this critical period, one of the charitable organizations was appealed to. Ignorance and superstition have been met with campaigns of education. Many cities in this country employ for this purpose literature. Tons of circulars and pamphlets, printed in all languages, have been distributed especially in the congested and foreign districts. It is questionable if these accomplish much good.

Attractive posters and wall cards, with instructions for mothers, have been successfully used in several cities, including Philadelphia, New York, Chicago and Boston. A most potent means of education is the consultations and clinics, especially for advising the parents of well infants. These have been copied after similar institutions existing for years in France. They are held at milk stations, hospital dispensaries, schools, and in open-air tents especially constructed for this purpose. New York, Boston, Cleveland, Rochester, Chicago and Philadelphia have such clinics in operation. Much of their success depends upon having physicians and nurses in charge who are interested and trained in this particular field of work. Education is a slow process and all the more so among foreigners handicapped by environment and superstition. Results are obtained by utilizing the public schools, teaching the older girls who are the future mothers. These girls also succeed in carrying home sufficient of the information to make a decided impression on their parents. Again the older child, especially among the poor, is the caretaker of her younger brothers and sisters.

The most valuable weapon against infant mortality is the trained visiting nurses and physicians, who enter the homes. They observe the true existing conditions and apply the remedies to the defects. They teach the people healthful living and correct unsanitary conditions. They prevent illness and care for the sick. To keep the well child in good health is most important, but we must also assure proper nursing and medical care to the sick infant. The wealthy can give their offspring the advantages of the services of specialists and trained nurses, while the poor are dependent on the dispensaries and hospitals. An investigation during the past summer in Philadelphia showed the hospitals to be sadly inadequate in their facilities for caring for the sick infants of the

poor. A similar investigation in other large cities may prove astonishing.

The Department of Public Health and Charities of Philadelphia, under its director, Dr. Joseph S. Neff, overcame some of this deficiency by establishing during the past summer, two refuges for babies on the recreation piers, situated on the river front. Four trained nurses, two to each pier, cared for the sick infants sent there by the nurses visiting the homes and by the attending physicians. These stations were open day and night, were practically open-air hospitals, and proved one of the most successful undertakings of the campaign.

Pure, clean and fresh milk is an absolute necessity to conserve the health of infants. This is a most serious problem with all cities. The magnitude of the task to procure a supply of good milk for a large city can be realized from the following facts: The daily milk supply of Philadelphia is 400,000 quarts, and an annual of 146,000,000 quarts. This is handled by 3,000 milk dealers and 5,000 producers, scattered in four different states. It is brought to the city by three railroads, a trolley company and innumerable wagons. Chicago requires a milk supply daily of almost 1,000,000 quarts, which is produced on 12,000 farms, by 120,000 cows. This production comes from five states. The supply for New York comes from 35,000 farms, located in six different states, and is shipped from 700 dairies. The study of this food supply, which is one of the gateways to success in reducing infant mortality, would make hundreds of volumes of literature. Philadelphia bids fair to reach a solution of the problem by the work of a recently appointed commission on milk. This commission was appointed by the mayor, through the efforts of Director Neff, the Bureau of Municipal Research, and others interested in the subject. They are studying exhaustively all phases of the situation. One thing is evident, that milk, when received, which is poor in quality can never be made suitable food for infants, and the best milk produced can be made worthless and dangerous when improperly handled after it leaves the producer. This neglect or ignorance may be in the shipping, with the dealer, or at the home. Lack of proper refrigeration seems to be a crucial point in most of the troubles. The time must come when cities will recognize it to be their duty to estab-

lish milk stations under their supervision, to supply the infant population with this necessity of life.

Milk stations to supply pure clean milk for infants have been maintained in a number of American cities. This milk is generally pasteurized and modified to suit various ages. These have in all cases been started and maintained by individuals and philanthropic organizations. New York's recent budget appropriation of \$40,000 for the purpose of establishing fifteen infant milk depots with equipment and machinery, is most commendable and an important step in the right direction. There is no doubt that a city owes to the health of its infant population the guarantee of pure, clean milk, and this is the most practical plan to obtain it. Philadelphia has been fortunate in possessing an institution known as the "Philadelphia Modified Milk Society," which was organized in 1903 through one of its enterprising newspapers, which accepted the offer of a \$5,000 plant from Mr. Nathan Straus, of New York. The society has been maintained and steadily increased its usefulness mainly through this same newspaper. It should be known, however, that at no time did they use the project as an advertisement. During the summer of 1910 the society met every request of the Health Bureau, and maintained eighteen distributing stations, including one on each recreation pier. The great demand for such a commodity and the scope of the work can be realized by the report from June 1 to December 31, 1910. During this period there were distributed 760,847 bottles of modified milk.

To best cope with the many and intricate problems arising to reduce infant mortality needs a division or bureau under the health department, especially equipped to meet the needs of the child. A Bureau of Child Hygiene is the logical outcome of these needs. In close relation to infant mortality is the licensing and supervision of midwives, lying-in maternities, and homes for boarding or keeping infants. The supervision of midwives, controlling those who are unfit for such duties, and teaching others is a most important duty. One can realize the folly of overlooking the midwife as a factor when from 30 to 85 per cent of the deliveries of infants in large cities are in the hands of these women. This custom of employing midwives is almost universal among the foreign population, and exists in the rural districts as well as the cities. A study of this work in Philadelphia shows that the intelligent care

of the infant by most of these women is most sadly lacking. Not only does it contribute to the mortality, but much of the blindness among infants can be traced to their neglect.

A concrete illustration of what can be accomplished by a well-organized and practical campaign was afforded by Philadelphia in the summer of 1910. Dr. Joseph S. Neff, director of the Department of Public Health and Charities, reports as follows on the Philadelphia experiment:

As a result of the provision of councils for the employment of eight municipal nurses and the appropriation of moneys for general expenses in connection therewith, and the aid rendered by various private associations in the summer campaign to preserve infant life, the statistics of the office show that during the past summer there has been forty per cent less mortality in infants under two years of age in the Second, Third, Fourth, Fifth and Nineteenth wards where efforts were concentrated, as compared with the rest of the city. The entire city benefited by the publicity campaign, the erection of new milk stations, and the work on the two city piers.

Medical inspectors of the bureau of health delivered lectures in the spring in the public schools, illustrated by paraphernalia used in the care of the baby, applied to living subjects in the presence of the older girls and their parents. Education of the mother was continued in the homes by personal instructions and demonstrations by the nurses.

Milk Stations Helped

The milk stations, too, were made educational centers and many medical clinics were established. Exhibits on the care of the baby were most effective teachers. They were placed in milk stations, schools, city piers, and other institutions and consisted of graphic charts, display cards, photographs, sketches and models which depicted the proper hygiene and care of the infant.

The department acknowledges its obligations to many private associations for their co-operation and the aid rendered in this movement. The Philadelphia Modified Milk Society responded to our every request to open new milk stations, which they did in eight separate instances and that without cost to the city. The Bureau of Municipal Research supplied two nurses and one clerk; the Visiting Nurse Society, two nurses; the Phipps Institute, one nurse; Starr Center, two nurses; Baby Alliance, one nurse; the Lighthouse, two nurses, all of whom reported directly to the municipal department having this campaign in charge, and worked in conjunction with the municipal visiting nurses.

In addition there were several private activities working independently along the same lines. Classes of mothers were held once a week in several sections and prizes were given by the Baby Alliance and the Lighthouse to mothers for those babies showing best results. Some of the best work in

this line was done in the Twenty-second and Fifteenth wards, under the charge of ladies interested in the movement.

As a result of the efforts of the department, through newspaper articles and public exhibits of soothing syrups and babies' comforters containing opium or more dangerous drugs, the Philadelphia Association of Retail Druggists passed resolutions indorsing the position of the department and condemning and discouraging the sale of these remedies by their members. This action was most magnanimous and has been lived up to by the druggists of Philadelphia. This movement has been far reaching as it was reported by the Associated Press and started similar movements in many other cities in the United States.

The following summary gives some idea of the amount of work performed:

Work Performed by the Visiting Nurses

Number of visits:	
Original visits for investigation and instruction	9,528
Special nursing visits	10,414
Revisits	8,213
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Total number of visits	28,155
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Number of sick infants given nursing care	5,043
Number of expectant women instructed	745
Disposal of cases:	
Referred to dispensaries or district physicians	1,635
Sent to hospitals	95
Sent to country or seashore	53
Cases received at central office:	
Number of calls to sick infants	503
Number of cases of destitution	71
Number of cases referred to various organizations	134
Number of deaths among cases attended by nurses	26

Work Performed at Recreation Piers

Chestnut Street, opened July 25; Race Street, opened August 3; closed October 8:

Number of sick infants in attendance	2,434
Number of well infants in attendance	2,014
Number of older children in attendance	3,593
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Total attendance	8,041
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Number of caretakers instructed	2,681
Bottles of modified milk dispensed at piers	13,449

In this, as in other medical work, the needs of the poor cannot be overlooked. Besides the cases of destitution referred to the various charitable organizations, there were distributed in the homes of those too poor to pay for it about 25,000 quarts of milk and 100,000 pounds of ice.

A study of its causes and methods of prevention of the enormous number of preventable deaths among infants most clearly shows that the work is not for any one class of people, but requires the united and persistent efforts of all, health authorities, federal, state and municipal, physicians, teachers, sociologists, philanthropists and every one who has at heart the health, happiness and prosperity of the nation.